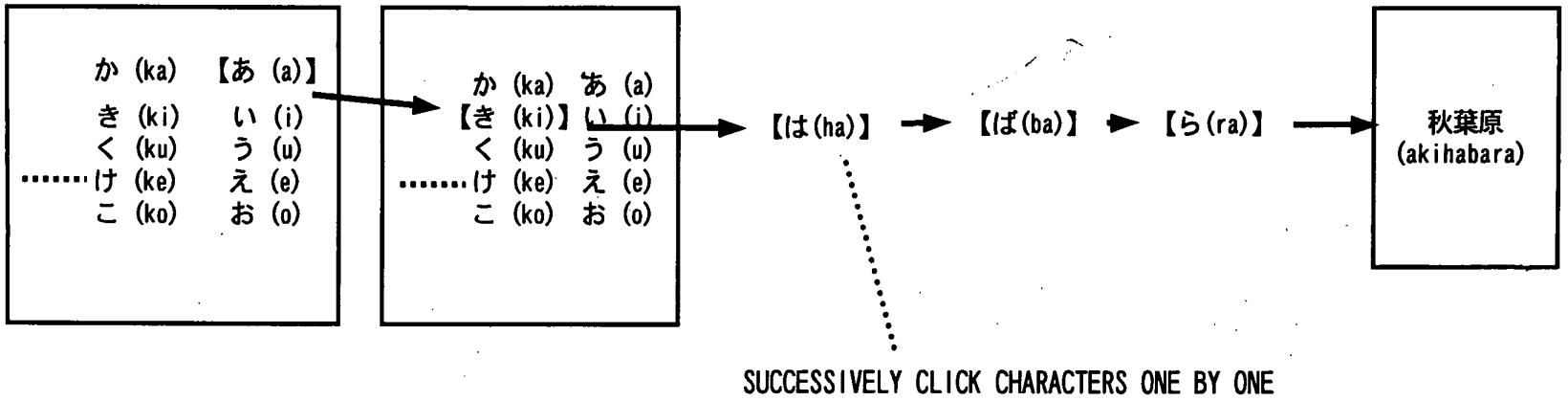

か (ka) 【あ (a)】
き (ki) い (i)
く (ku) う (u)
け (ke) え (e)
こ (ko) お (o)
か (ka) あ (a)
【き (ki)】い (i)
く (ku) う (u)
け (ke) え (e)
こ (ko) お (o)
【は(ha)】
【ば(ba)】
【ら(ra)】
秋葉原
(akihabara)
SUCCESSIVELY CLICK CHARACTERS ONE BY ONE

FIG. 1

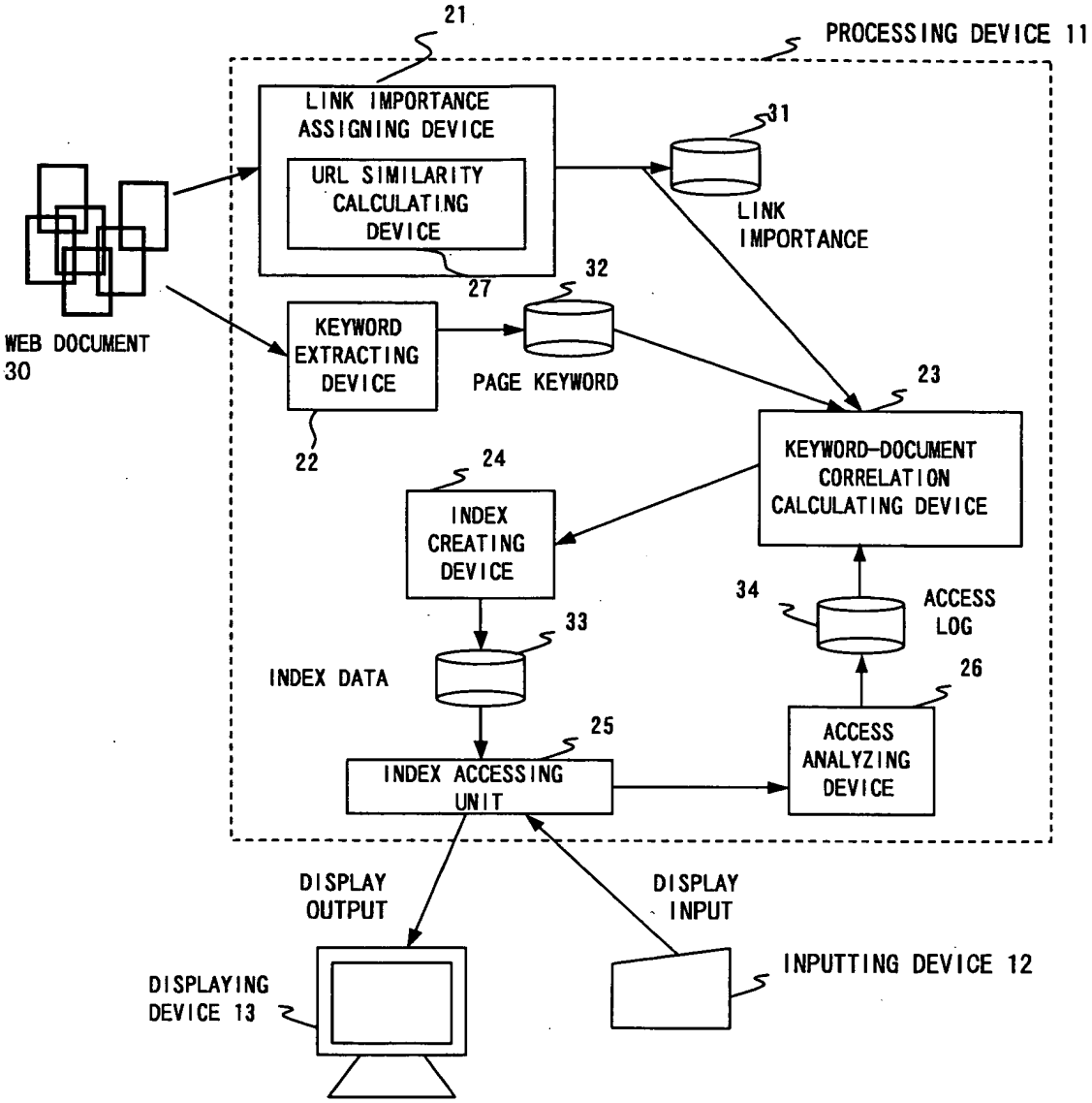

21
PROCESSING DEVICE 11
LINK IMPORTANCE ASSIGNING DEVICE
URL SIMILARITY CALCULATING DEVICE
27
31
LINK IMPORTANCE
32
WEB DOCUMENT 30
KEYWORD EXTRACTING DEVICE
22
PAGE KEYWORD
23
KEYWORD-DOCUMENT CORRELATION CALCULATING DEVICE
24
INDEX CREATING DEVICE
34
ACCESS LOG
33
INDEX DATA
26
25
INDEX ACCESSING UNIT
ACCESS ANALYZING DEVICE
DISPLAY OUTPUT
DISPLAY INPUT
DISPLAYING DEVICE 13
INPUTTING DEVICE 12

FIG. 2

DOCUMENT ID	URL	TITLE	REFERENCED DOCUMENT	LINK IMPORTANCE
00001	http://www.fujitsu.co.jp/	FUJITSU HOME		1023
00002	http://www.kantei.go.jp/	OFFICIAL RESIDENCE OF PRIME MINISTER		2055
・ ・ ・				

DOCUMENT INFORMATION TABLE 41

DOCUMENT ID	URL SIMILARITY
00006	3
00138	2
・・・・・	

REFERENCED DOCUMENT TABLE 42

FIG. 3

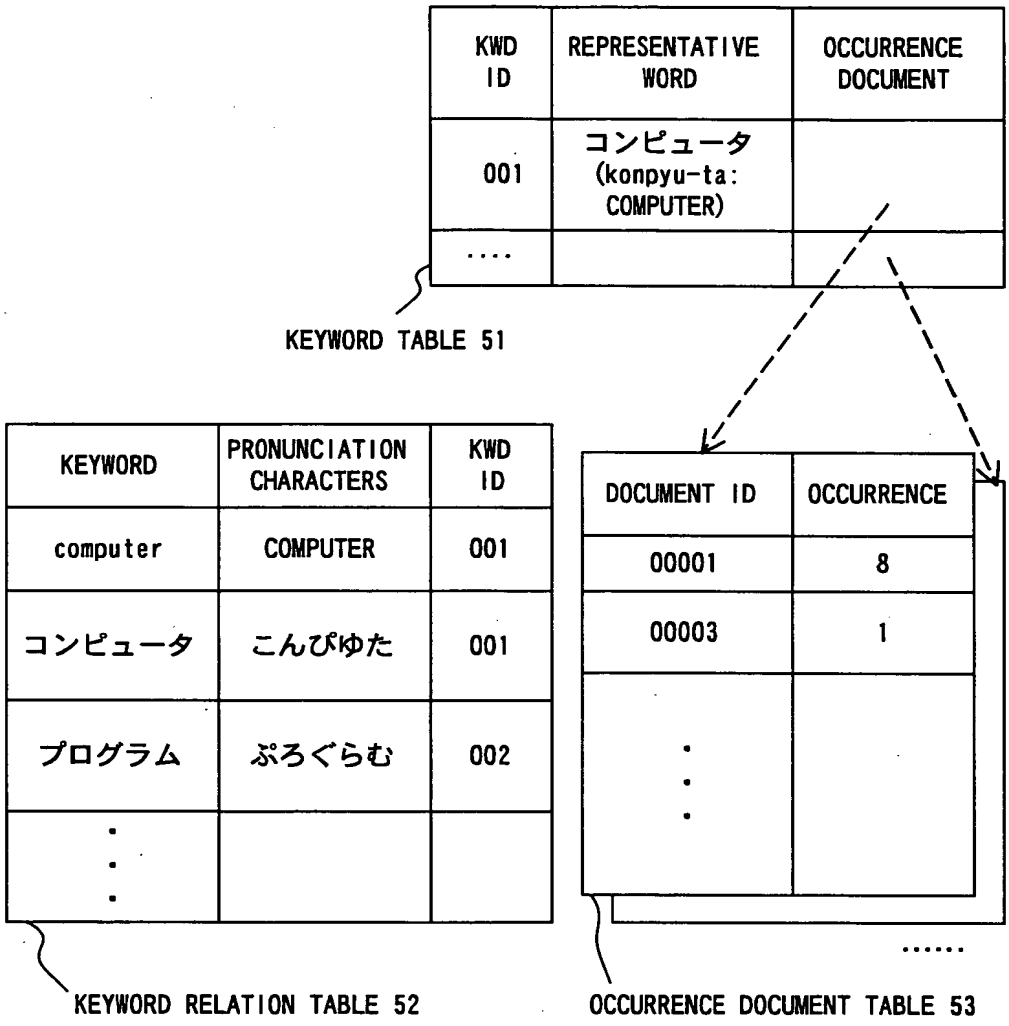

KWD ID
REPRESENTATIVE WORD
OCCURRENCE DOCUMENT
001
コンピュータ (konpyu-ta: COMPUTER)
....
KEYWORD TABLE 51
KEYWORD
PRONUNCIATION CHARACTERS
KWD ID
computer
COMPUTER
001
コンピュータ
こんぴゆた
001
プログラム
ぷろぐらむ
002
KEYWORD RELATION TABLE 52
DOCUMENT ID
OCCURRENCE
00001
8
00003
1
.....
OCCURRENCE DOCUMENT TABLE 53

FIG. 4

CHARACTER STRING	FOLLOWING CHARACTER STRINGS	KEYWORD STRINGS
TOP	あ (a), い (i), ..	
あ (a)	あいぼ(aibo), あお(ao), ...	
あいぼ (aibo)		相棒 (aibou:MATE), アイボリー(aibori : IVORY).
あお (ao)	あおぞ(aozora)	青 (ao: BLUE), 蒼 (ao: DARK BLUE), ...

INDEX INFORMATION TABLE 61

KEYWORD ID	CORRELATED DOCUMENT ID STRINGS
093 321	0005, 0008, .. 0004, 0008, ...

CORRELATED DOCUMENT TABLE 62

DOCUMENT ID	CORRELATED KEYWORD ID STRINGS
0005 0008 . . .	093, 099, 122, ... 093, 156, 321, ...

CORRELATED KEYWORD TABLE 63

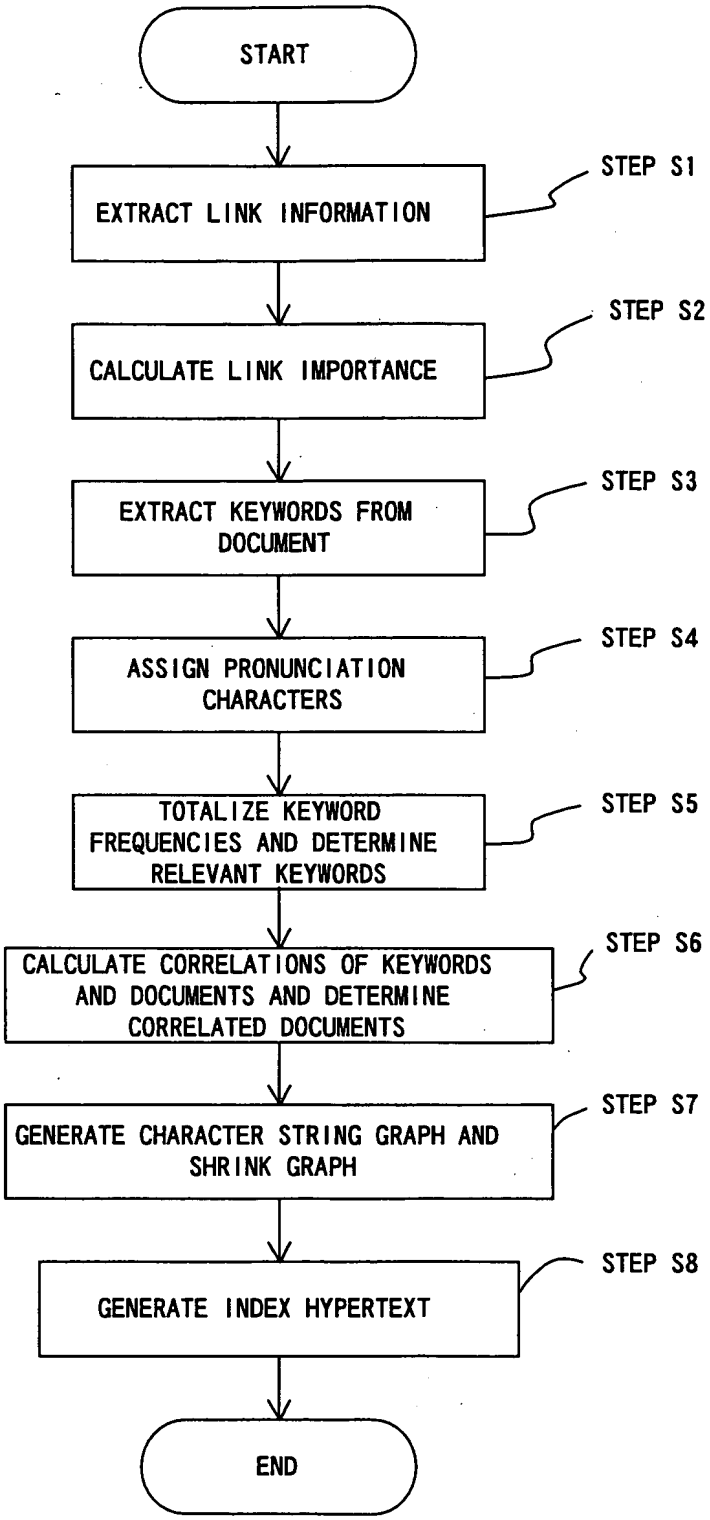
FIG. 5

FORMAT IN yyyymmddHHMM

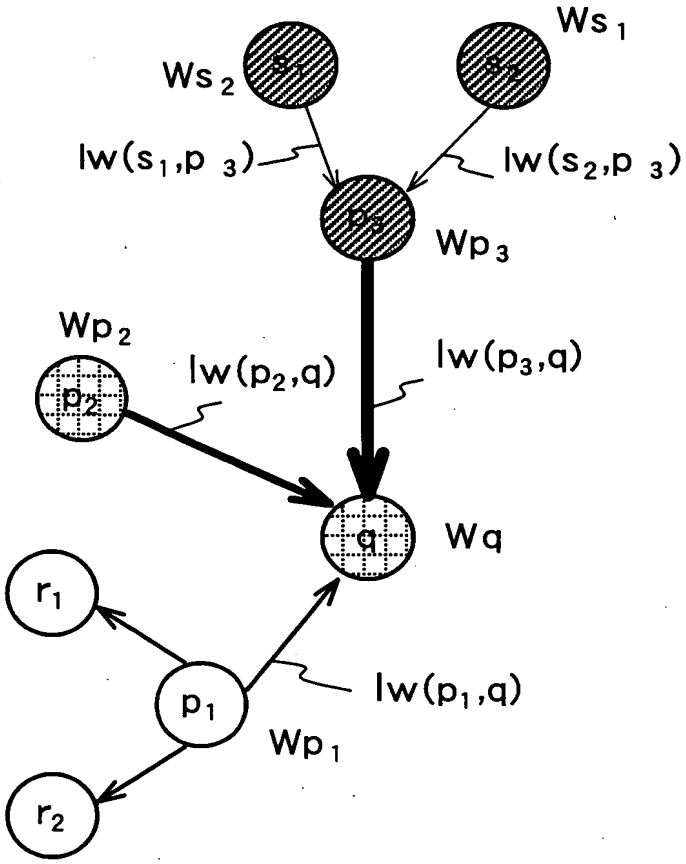
DATE AND TIME	KWD ID	DOCUMENT ID
200001121436	003	00123
200001121437	005	00054
⋮		

ACCESS LOG 71

F I G. 6


START
EXTRACT LINK INFORMATION
STEP S1
CALCULATE LINK IMPORTANCE
STEP S2
EXTRACT KEYWORDS FROM DOCUMENT
STEP S3
ASSIGN PRONUNCIATION CHARACTERS
STEP S4
TOTALIZE KEYWORD FREQUENCIES AND DETERMINE RELEVANT KEYWORDS
STEP S5
CALCULATE CORRELATIONS OF KEYWORDS AND DOCUMENTS AND DETERMINE CORRELATED DOCUMENTS
STEP S6
GENERATE CHARACTER STRING GRAPH AND SHRINK GRAPH
STEP S7
GENERATE INDEX HYPERTEXT
STEP S8
END

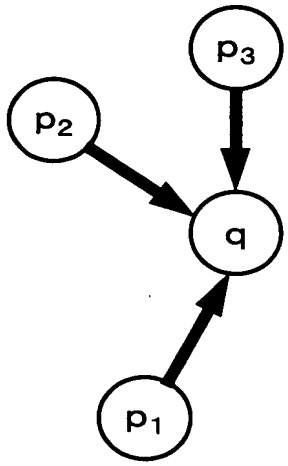
F I G. 7



CIRCLE(○) : WEB PAGE
THICKNESS OF ARROW(→) : LINK WEIGHT
PATTERN OF CIRCLE(○) : URL SIMILARITY

FIG. 8

$sim(p_i, q)=1$

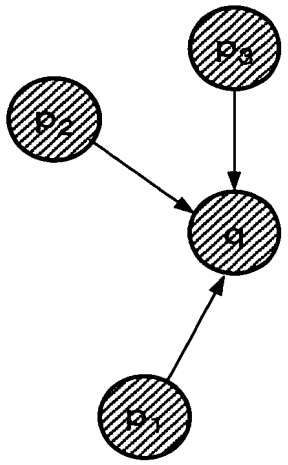


$$lw(p_i, q)=\frac{1}{sim(p_i, q)}=1$$

$$w_q=c_q+w_{p1}+w_{p2}+w_{p3}$$

FIG. 9A

$sim(p_i, q)=n+1$



$$lw(p_i, q)=\frac{1}{sim(p_i, q)}=\frac{1}{n+1}$$

$$w_q=c_q+\frac{w_{p1}+w_{p2}+w_{p3}}{n+1}$$

FIG. 9B

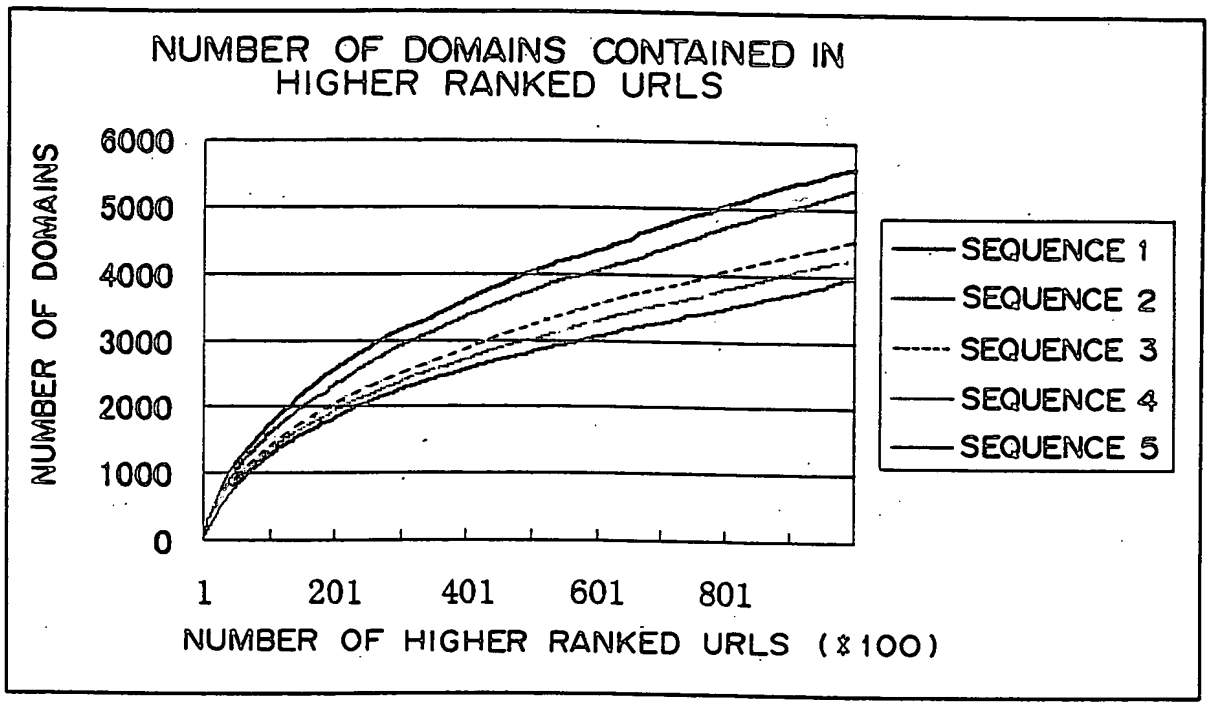
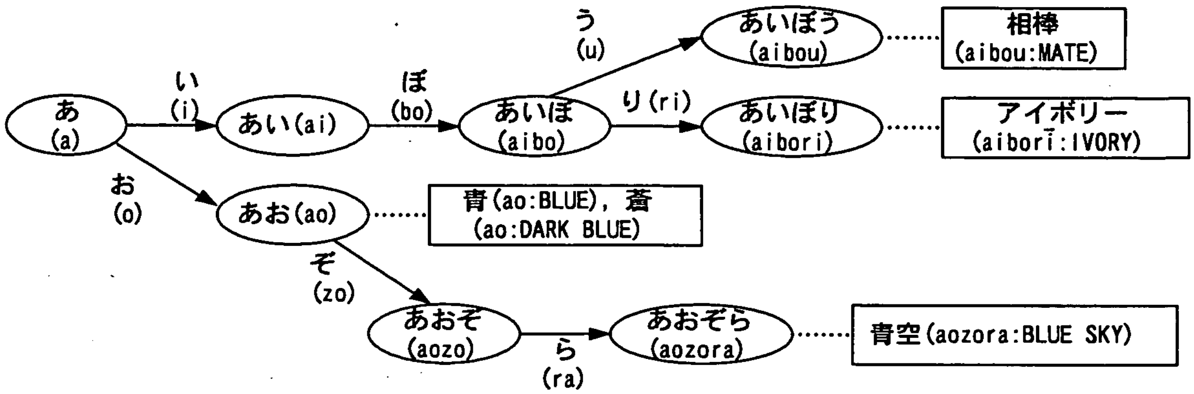
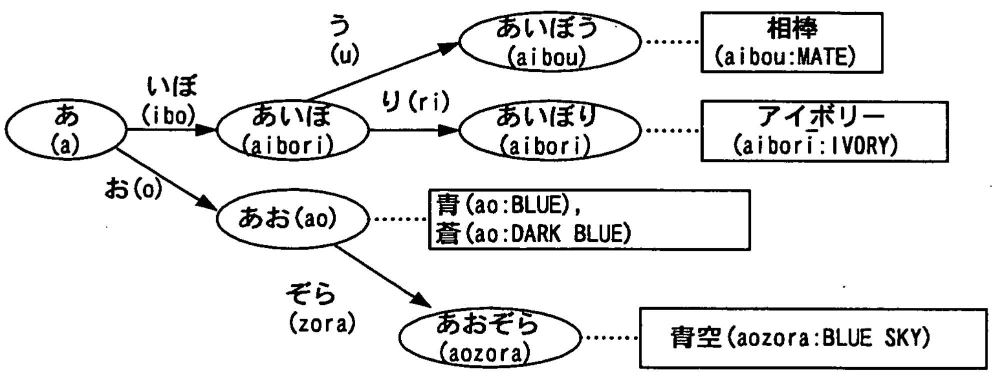

NUMBER OF DOMAINS CONTAINED IN HIGHER RANKED URLS
NUMBER OF DOMAINS
6000
5000
4000
3000
2000
1000
0
1
201
401
601
801
NUMBER OF HIGHER RANKED URLS (X100)
SEQUENCE 1
SEQUENCE 2
SEQUENCE 3
SEQUENCE 4
SEQUENCE 5

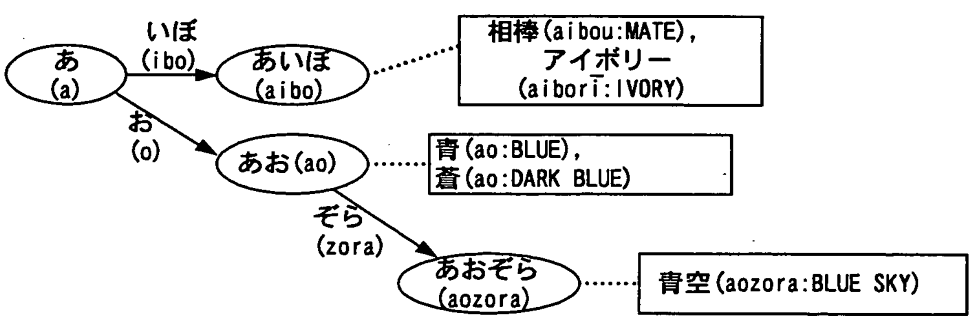
FIG. 10



F I G. 1 1 A



F I G. 1 1 B



F I G. 1 1 C

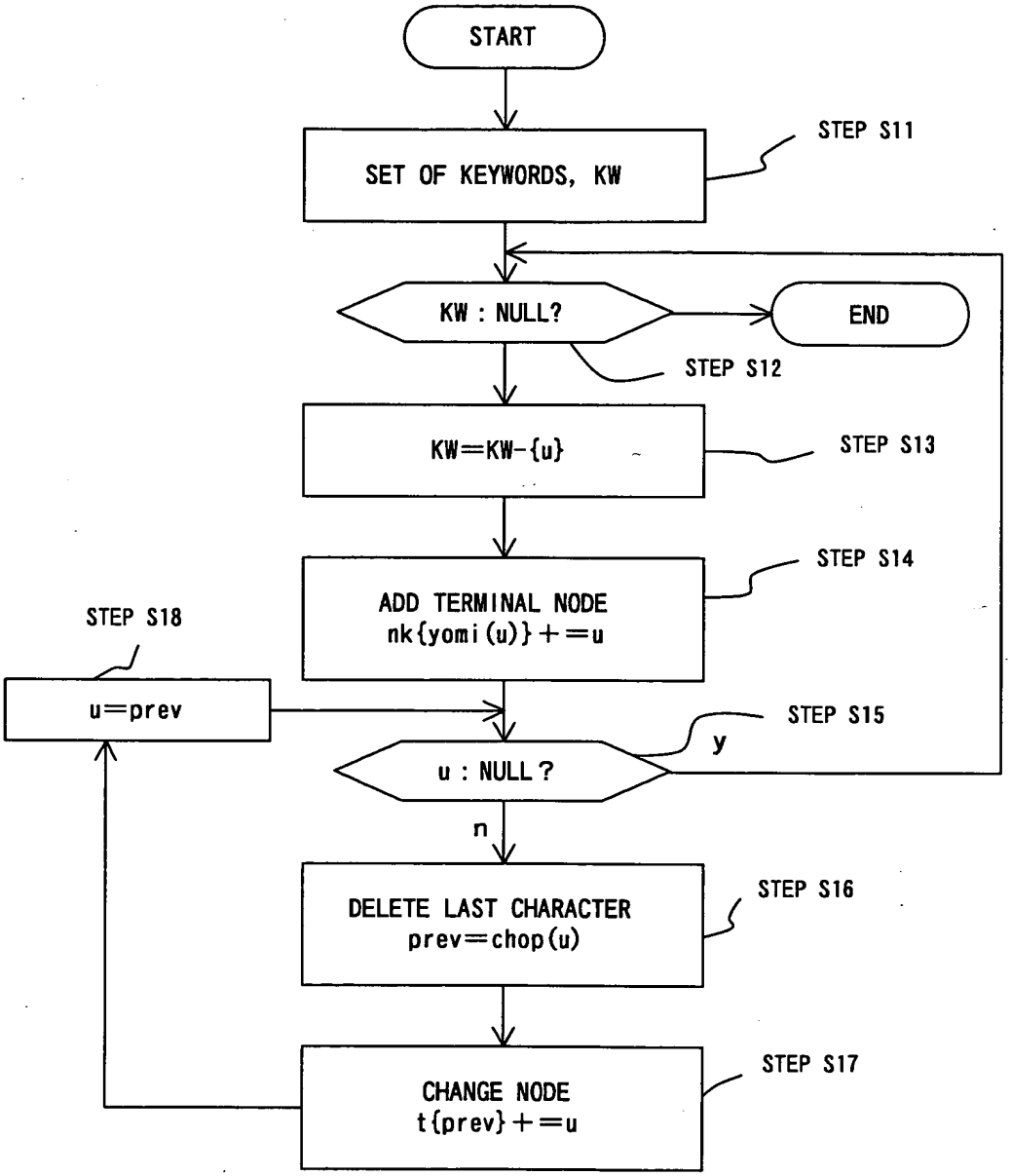

START
SET OF KEYWORDS, KW
STEP S11
KW : NULL?
END
STEP S12
KW=KW-{u}
STEP S13
ADD TERMINAL NODE
nk{yomi(u)}+=u
STEP S14
STEP S18
u=prev
STEP S15
y
u : NULL ?
n
DELETE LAST CHARACTER
prev=chop(u)
STEP S16
CHANGE NODE
t{prev}+=u
STEP S17

FIG. 12

```
proc init_kw_graph ()
{
  @KW:set of keywords;      # SET OF KEYWORDS
  yomi : YOMI/Spell of keywords; # FUNCTION OR ARRAY THAT RETURNS PRONUNCIATION CHARACTERS OF KEYWORD
  foreach u in KW {          # FOR EACH KEYWORD u
    nk{yomi{u}} .= u."+";   # DESIGNATE nk( ) OF NODE OF PRONUNCIATION CHARACTERS OF KEYWORD u
    for ( i=0; i<length(u); i++) {    # REPEAT FOR LENGTH OF CHARACTER STRING OF KEYWORD u
        local prev = chop(u);          # DELETE LAST CHARACTER OF KEYWORD u AND ADD TO PARENT NODE
      t{prev} .= u."+";
        u = prev;
    }
}
}
```

FIG. 13

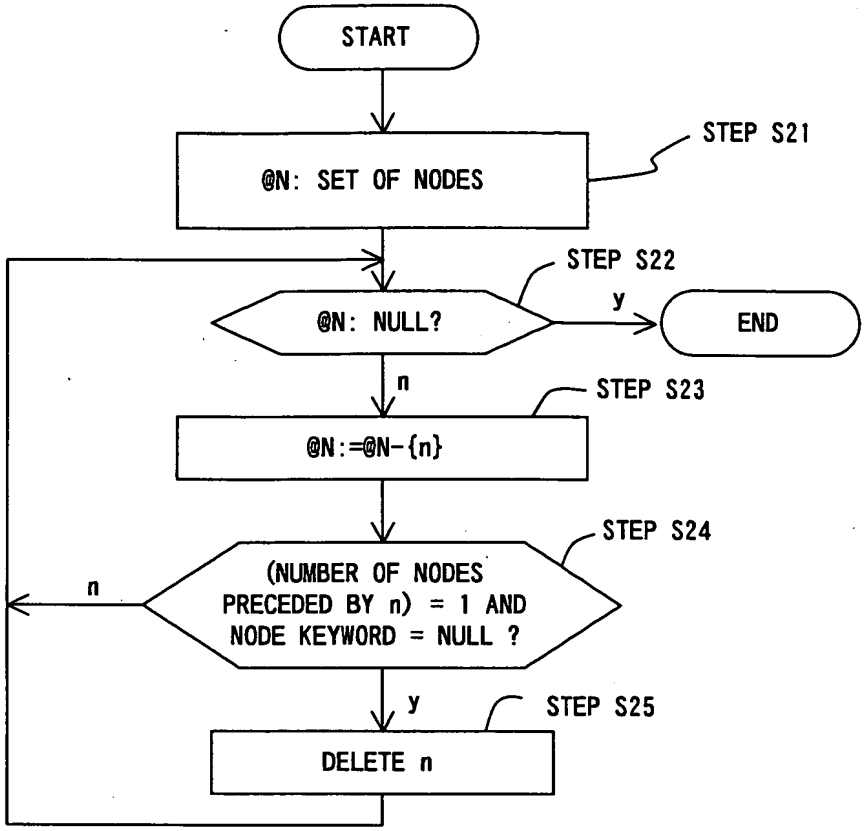

START
@N: SET OF NODES
STEP S21
STEP S22
@N: NULL?
y
END
n
STEP S23
@N:=@N-{n}
STEP S24
(NUMBER OF NODES
PRECEDED BY n) = 1 AND
NODE KEYWORD = NULL ?
n
y
STEP S25
DELETE n

FIG. 14

```
proc shrink_middle ()
{
  @N : set of nodes
  foreach n (@N) {
    next = t{n};     # NEXT NODE LIST
      kw = nk{n};      #  KEYWORD LIST
      if (length(next) ==1 && kw == "") {
        delete(n)              #  DELETE NODE n
    }
  }
}
```

FIG. 15

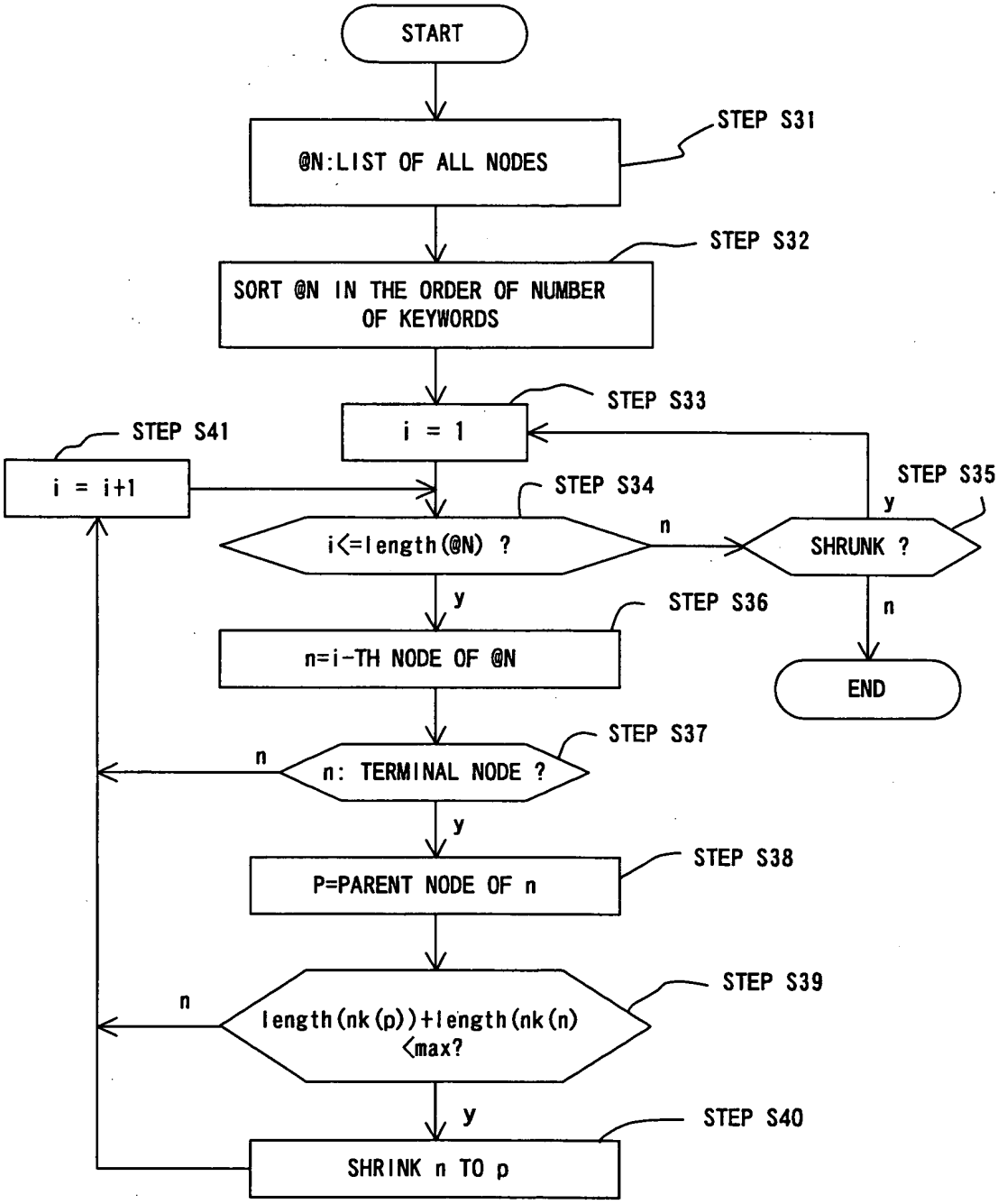

START
@N:LIST OF ALL NODES
STEP S31
SORT @N IN THE ORDER OF NUMBER OF KEYWORDS
STEP S32
i = 1
STEP S33
i = i+1
STEP S41
i<=length(@N) ?
STEP S34
n
SHRUNK ?
STEP S35
y
n
END
y
n=i-TH NODE OF @N
STEP S36
n: TERMINAL NODE ?
STEP S37
n
y
P=PARENT NODE OF n
STEP S38
length(nk(p))+length(nk(n)) <max?
STEP S39
n
y
SHRINK n TO p
STEP S40

FIG. 16

```
proc shrink_leaf ()
{
  @N: set of nodes;      # NODE LIST
  word_max =2;             # word_max : IN THIS EXAMPLE, 2
  changed = true;             # WHEN KEYWORD IS TRANSFERRED, true
  @N = sort by_nk_length @N; # SORTING IN ASCENDING ORDER OF NUMBER OF KEYWORDS
  while (changed) {          # CONTINUING WHILE TRANSFER IS PERFORMED
      changed = false;
      foreach n in @N {
       if (is_leaf(n)) {      # IN THE CASE OF TERMINAL NODE
          p = parent_node(n);      # PARENT NODE
          if (length(nk{p}) + length(nk{n}) < word_max) {
             nk{p}.= nk{n}."+"; # TRANSFERRING KEYWORD
             delete (n);     # DELETE TERMINAL NODE
             changed = true;   # PROOF OF TRANSFER
          }
         }
     }
   }
}
```

FIG. 17

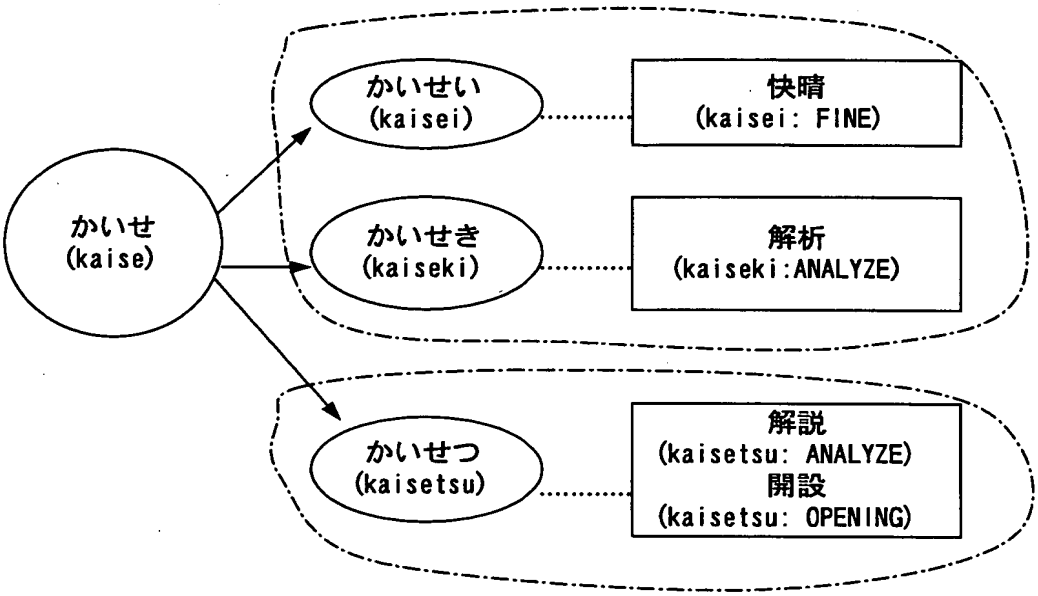

かいせ
(kaise)
かいせい
(kaisei)
快晴
(kaisei: FINE)
かいせき
(kaiseki)
解析
(kaiseki:ANALYZE)
かいせつ
(kaisetsu)
解説
(kaisetsu: ANALYZE)
開設
(kaisetsu: OPENING)

FIG. 18

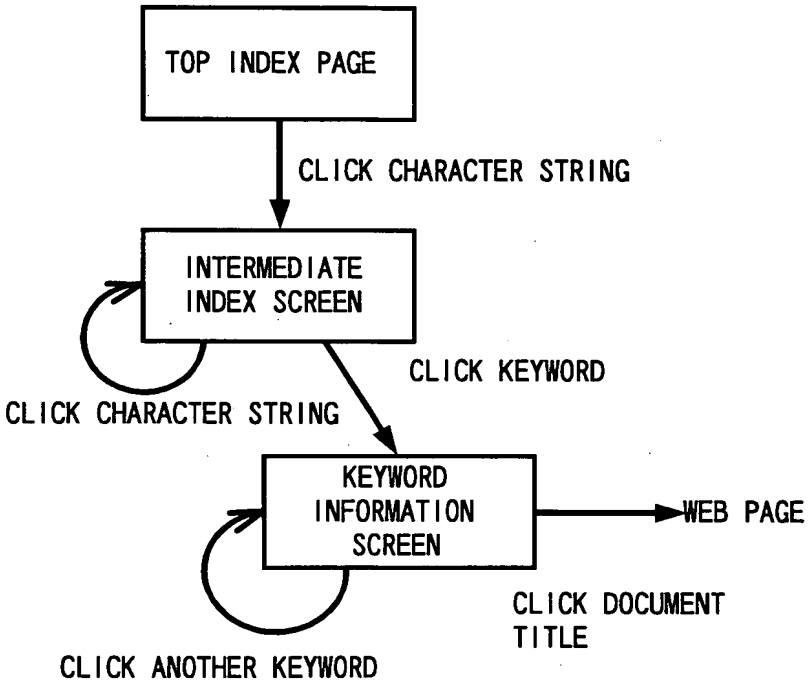

TOP INDEX PAGE
CLICK CHARACTER STRING
INTERMEDIATE INDEX SCREEN
CLICK KEYWORD
CLICK CHARACTER STRING
KEYWORD INFORMATION SCREEN
WEB PAGE
CLICK DOCUMENT TITLE
CLICK ANOTHER KEYWORD

FIG. 19

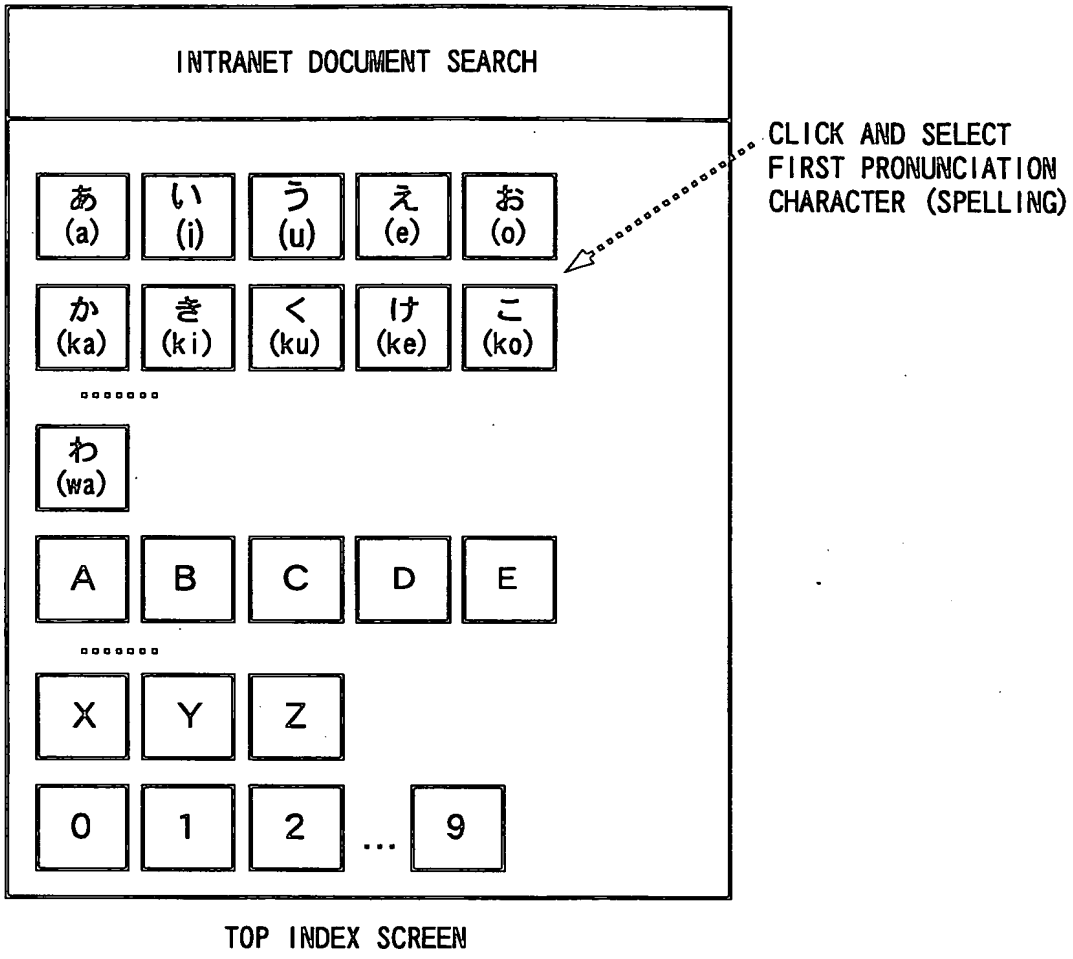

INTRANET DOCUMENT SEARCH
CLICK AND SELECT
FIRST PRONUNCIATION
CHARACTER (SPELLING)
あ (a)
い (i)
う (u)
え (e)
お (o)
か (ka)
き (ki)
く (ku)
け (ke)
こ (ko)
わ (wa)
A
B
C
D
E
X
Y
Z
0
1
2
...
9
TOP INDEX SCREEN

FIG. 20

INTELLECTUAL 50-KANA CHARACTER INDEX OF INTRA-COMPANY PAGES

あ(a)	い(i)	う(u)	え(e)	お(o)						
か(ka)	き(ki)	く(ku)	け(ke)	こ(ko)	が(ga)	ぎ(gi)	ぐ(gu)	げ(ge)	ご(go)	
さ(sa)	し(shi)	す(su)	せ(se)	そ(so)	ざ(za)	じ(ji)	ず(zu)	ぜ(ze)	ぞ(zo)	
た(ta)	ち(chi)	つ(tsu)	て(te)	と(to)	だ(da)	で(de)	ど(do)			
な(na)	に(ni)	ぬ(nu)	ね(ne)	の(no)						
は(ha)	ひ(hi)	ふ(fu)	へ(he)	ほ(ho)	ば(ba)	び(bi)	ぶ(bu)	べ(be)	ぼ(bo)	ぱ(pa)
	ぴ(bi)	ぷ(bu)	ぺ(be)	ぽ(bo)						
ま(ma)	み(mi)	む(mu)	め(me)	も(mo)						
や(ya)	ゆ(yu)	よ(yo)								
ら(ra)	り(ri)	る(ru)	れ(re)	ろ(ro)						
わ(wa)										

A B C D E F G H I J K L M N O P Q R S T U V W X

1 2 3 8 s

(NOTE)"-" LONG SOUND SHOULD BE REMOVED. SELECT "っ(tu)" AND "や(ya)" FOR "つ(tu)" AND "や(ya).

SEARCH FOR A KEYWORD INCLUDING

CLEAR

FIG. 21

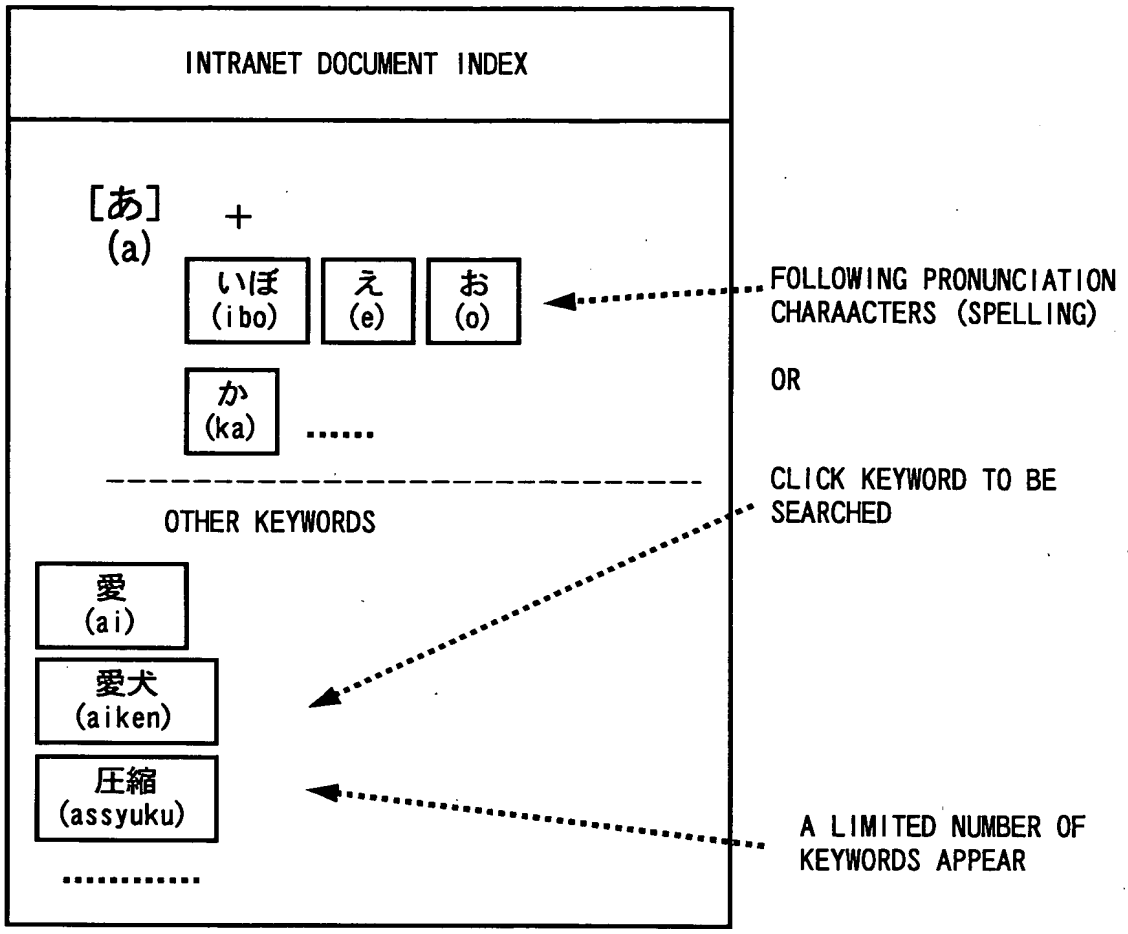

INTRANET DOCUMENT INDEX
[あ]
(a)
+
いぼ
(ibo)
え
(e)
お
(o)
か
(ka)
.....
OTHER KEYWORDS
愛
(ai)
愛犬
(aiken)
圧縮
(assyuku)
.....
FOLLOWING PRONUNCIATION CHARAACTERS (SPELLING)
OR
CLICK KEYWORD TO BE SEARCHED
A LIMITED NUMBER OF KEYWORDS APPEAR

FIG. 22

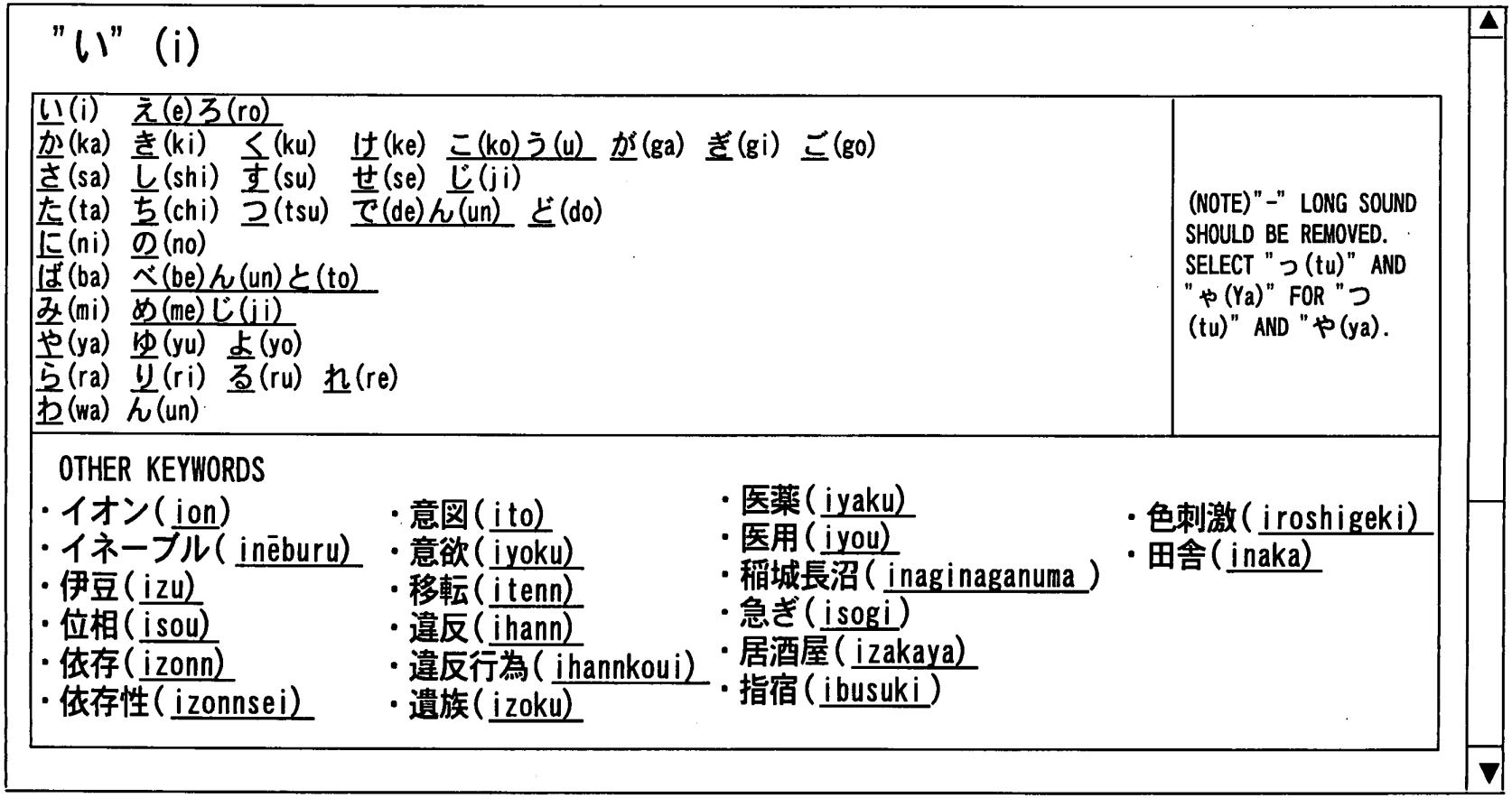

"い" (i)
い(i) え(e)ろ(ro)
か(ka) き(ki) く(ku) け(ke) こ(ko)う(u) が(ga) ぎ(gi) ご(go)
さ(sa) し(shi) す(su) せ(se) じ(ji)
た(ta) ち(chi) つ(tsu) で(de)ん(un) ど(do)
に(ni) の(no)
ば(ba) べ(be)ん(un)と(to)
み(mi) め(me)じ(ji)
や(ya) ゆ(yu) よ(yo)
ら(ra) り(ri) る(ru) れ(re)
わ(wa) ん(un)
(NOTE)"-" LONG SOUND SHOULD BE REMOVED. SELECT "っ(tu)" AND "ゃ(Ya)" FOR "つ (tu)" AND "や(ya).
OTHER KEYWORDS
・イオン(ion)
・イネーブル(inēburu)
・伊豆(izu)
・位相(isou)
・依存(izonn)
・依存性(izonnsei)
・意図(ito)
・意欲(iyoku)
・移転(itenn)
・違反(ihann)
・違反行為(ihannkoui)
・遺族(izoku)
・医薬(iyaku)
・医用(iyou)
・稲城長沼(inaginaganuma)
・急ぎ(isogi)
・居酒屋(izakaya)
・指宿(ibusuki)
・色刺激(iroshigeki)
・田舎(inaka)

FIG. 23

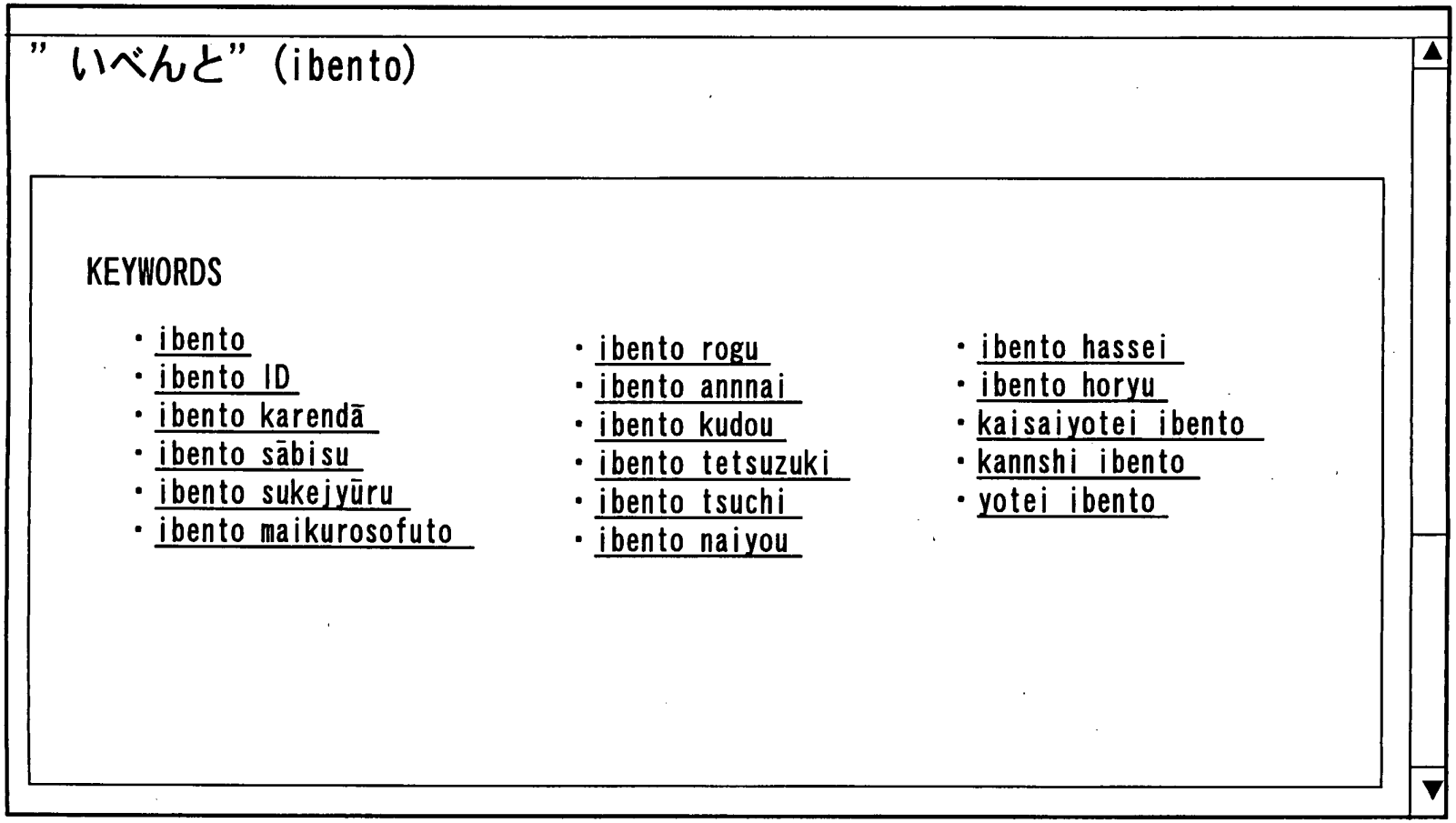

”いべんと”(ibento)
KEYWORDS
・ibento
・ibento ID
・ibento karendā
・ibento sābisu
・ibento sukejyūru
・ibento maikurosofuto
・ibento rogu
・ibento annnai
・ibento kudou
・ibento tetsuzuki
・ibento tsuchi
・ibento naiyou
・ibento hassei
・ibento horyu
・kaisaiyotei ibento
・kannshi ibento
・yotei ibento

FIG. 24

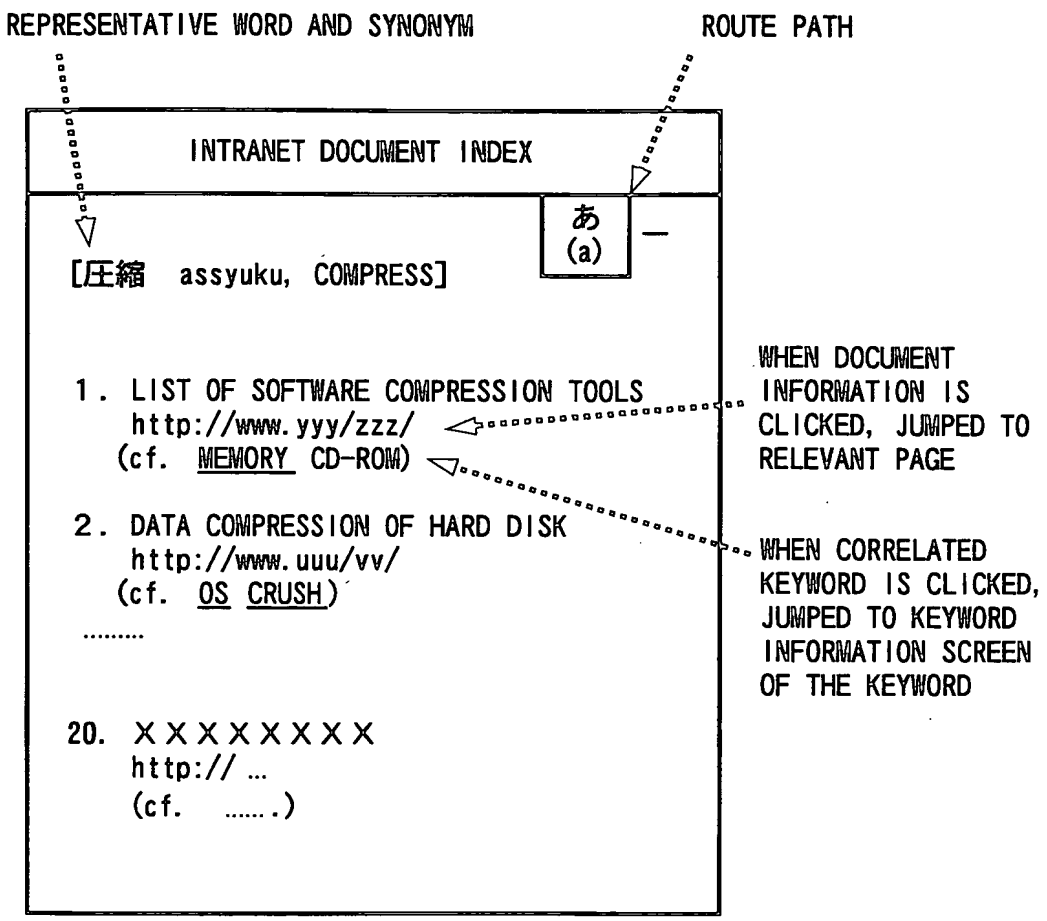

REPRESENTATIVE WORD AND SYNONYM
ROUTE PATH
INTRANET DOCUMENT INDEX
あ
(a)
[圧縮 assyuku, COMPRESS]
1. LIST OF SOFTWARE COMPRESSION TOOLS
http://www.yyy/zzz/
(cf. MEMORY CD-ROM)
2. DATA COMPRESSION OF HARD DISK
http://www.uuu/vv/
(cf. OS CRUSH)
.....
20. XXXXXXXX
http:// ...
(cf. .....)
WHEN DOCUMENT INFORMATION IS CLICKED, JUMPED TO RELEVANT PAGE
WHEN CORRELATED KEYWORD IS CLICKED, JUMPED TO KEYWORD INFORMATION SCREEN OF THE KEYWORD

FIG. 25


トップ (toppu)-イ(i)-イベント (ibento)
「イベントカレンダー」
(IBENTO KARENDĀ : EVENT CALENDAR)
MAJOR PAGES ABOUT "イベントカレンダー"
• http://www.paso.co.jp/event/2000.html (03/17/1999)
2000 NEN KARENDĀ : CALENDAR OF YEAR 2000
(KEYWORDS : ソフトウェア(sofutouea : SOFTWARE), 展示会(tenjikai : EXHIBITION))
• http://www.cal.co.jp/event9907.html (06/23/1999)
7 GATSU NO MOYOUSHI : EVENT ON JULY
(KEYWORDS : 音楽会(ongakukai : CONCERT), コンサート(konsāto : CONCERT))
• http://www.yohoo.co.jp/event/ (06/23/1999)
イベントリスト (ibent risto : EVENT LIST)

FIG. 26

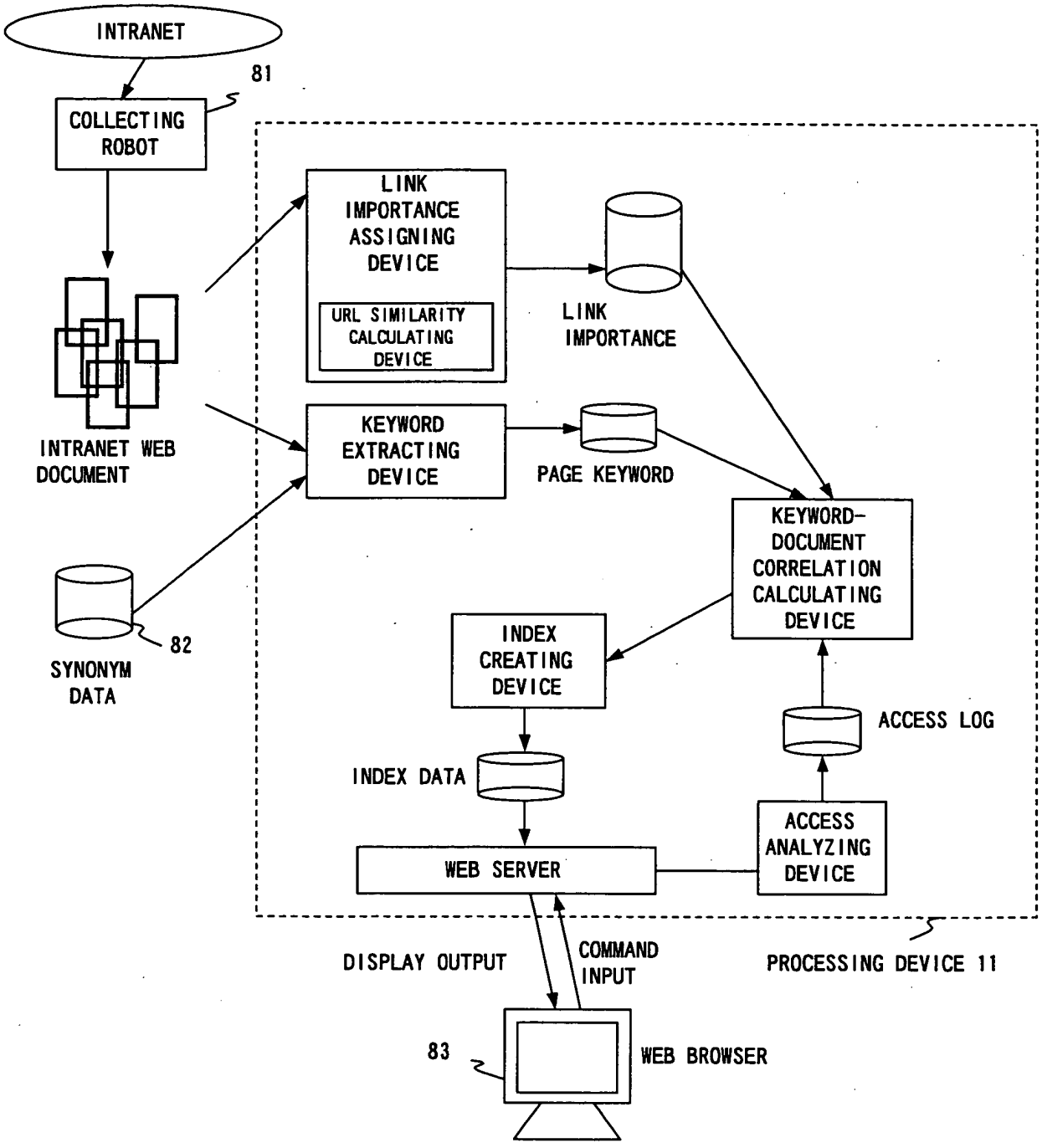

INTRANET
81
COLLECTING ROBOT
LINK IMPORTANCE ASSIGNING DEVICE
URL SIMILARITY CALCULATING DEVICE
LINK IMPORTANCE
INTRANET WEB DOCUMENT
KEYWORD EXTRACTING DEVICE
PAGE KEYWORD
KEYWORD-DOCUMENT CORRELATION CALCULATING DEVICE
82
SYNONYM DATA
INDEX CREATING DEVICE
ACCESS LOG
INDEX DATA
ACCESS ANALYZING DEVICE
WEB SERVER
DISPLAY OUTPUT
COMMAND INPUT
PROCESSING DEVICE 11
83
WEB BROWSER

FIG. 27

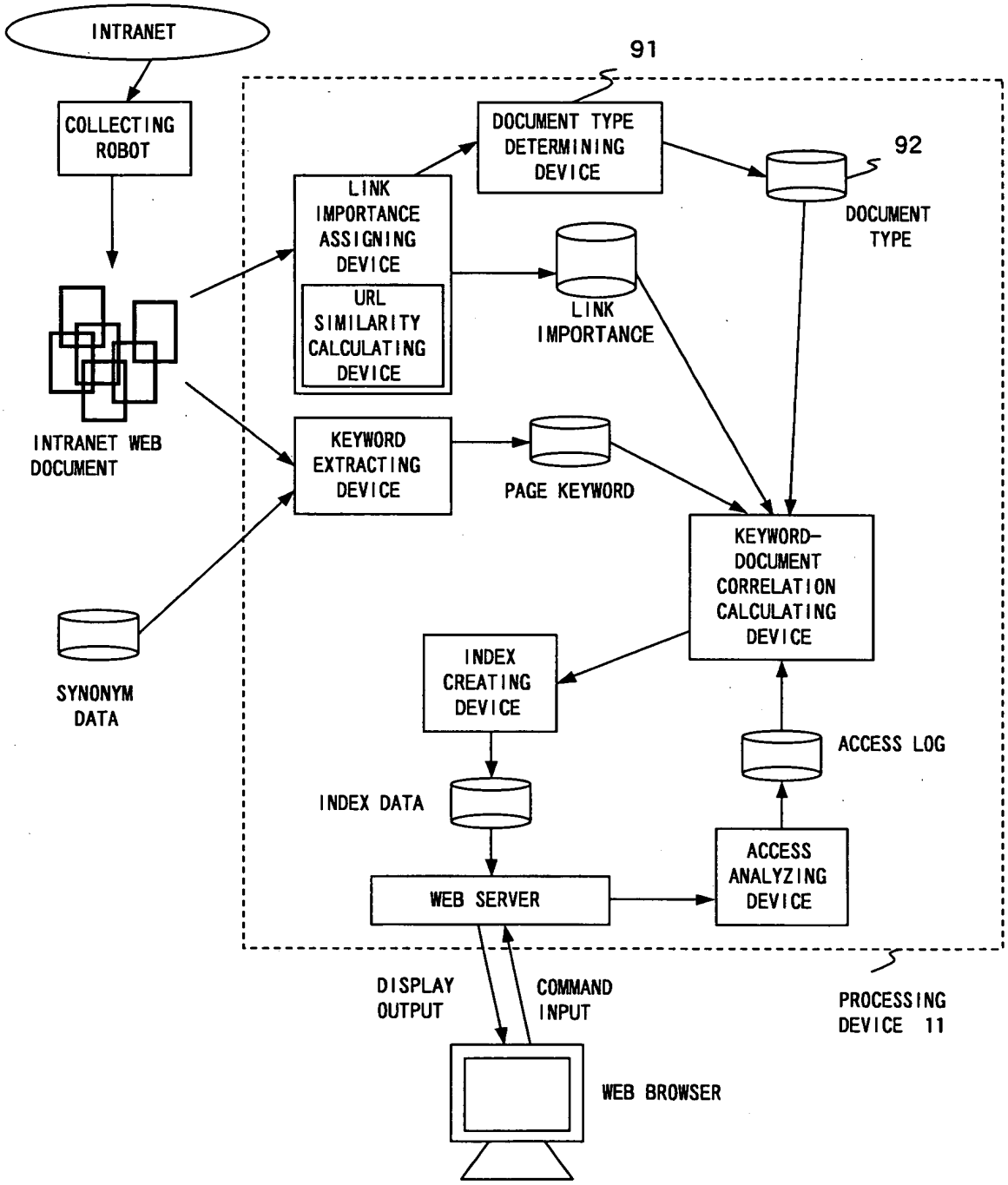

INTRANET
COLLECTING ROBOT
INTRANET WEB DOCUMENT
SYNONYM DATA
91
DOCUMENT TYPE DETERMINING DEVICE
92
DOCUMENT TYPE
LINK IMPORTANCE ASSIGNING DEVICE
URL SIMILARITY CALCULATING DEVICE
LINK IMPORTANCE
KEYWORD EXTRACTING DEVICE
PAGE KEYWORD
KEYWORD-DOCUMENT CORRELATION CALCULATING DEVICE
INDEX CREATING DEVICE
ACCESS LOG
INDEX DATA
ACCESS ANALYZING DEVICE
WEB SERVER
DISPLAY OUTPUT
COMMAND INPUT
PROCESSING DEVICE 11
WEB BROWSER

FIG. 28

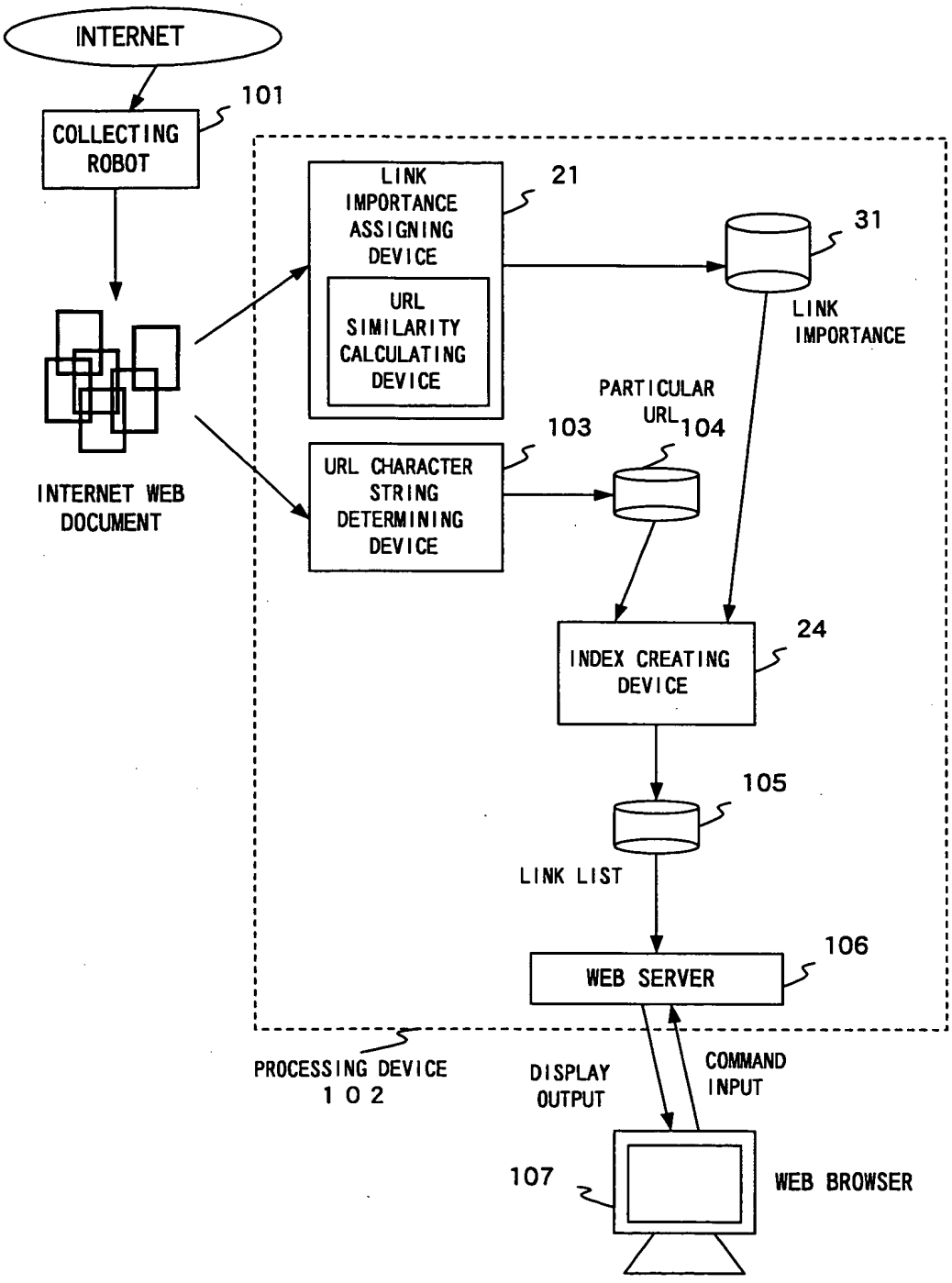

INTERNET
101
COLLECTING ROBOT
LINK IMPORTANCE ASSIGNING DEVICE
21
URL SIMILARITY CALCULATING DEVICE
31
LINK IMPORTANCE
INTERNET WEB DOCUMENT
PARTICULAR URL
103
104
URL CHARACTER STRING DETERMINING DEVICE
INDEX CREATING DEVICE
24
105
LINK LIST
106
WEB SERVER
PROCESSING DEVICE 102
DISPLAY OUTPUT
COMMAND INPUT
107
WEB BROWSER

FIG. 29

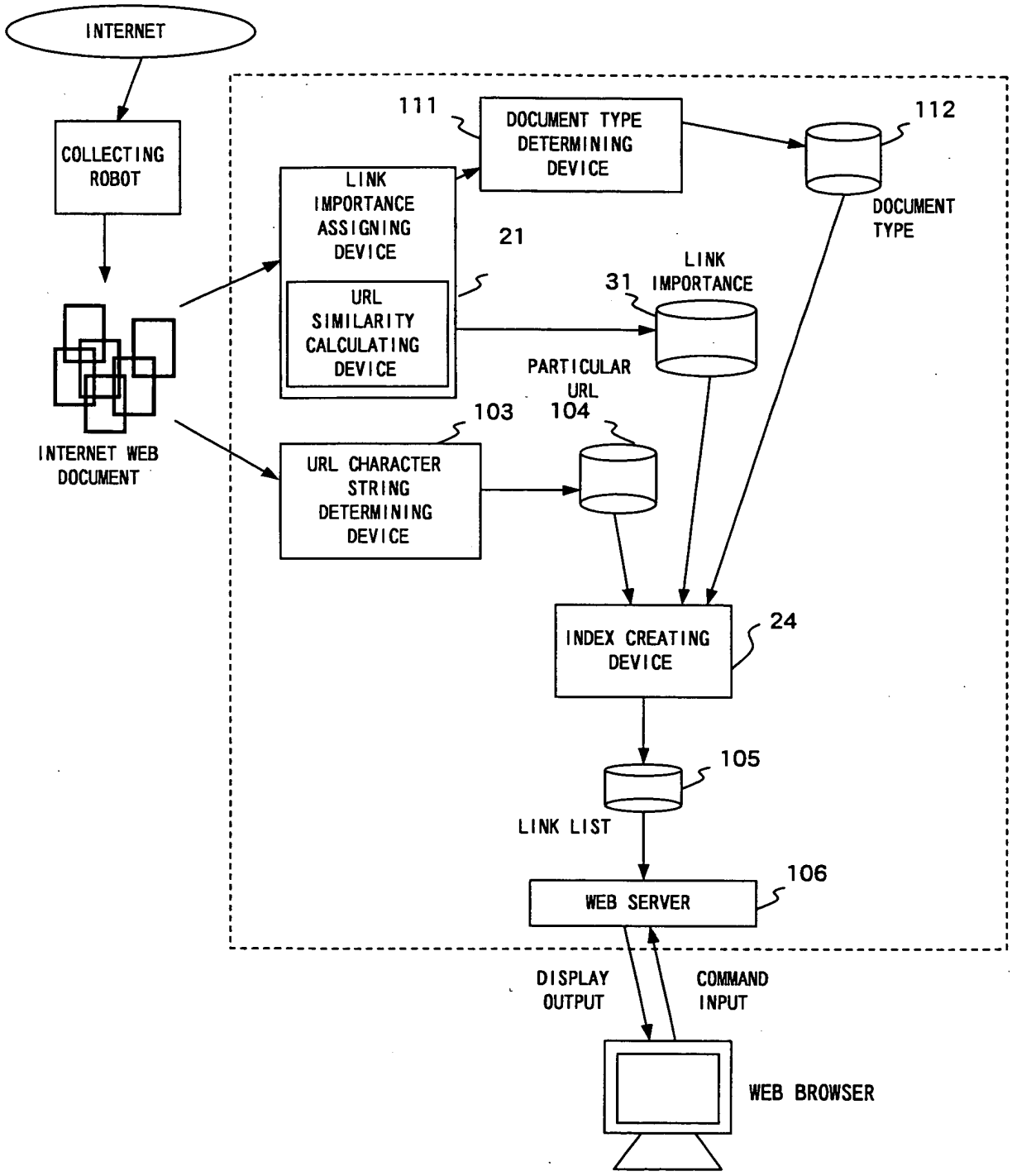

INTERNET
COLLECTING ROBOT
INTERNET WEB DOCUMENT
111
DOCUMENT TYPE DETERMINING DEVICE
112
DOCUMENT TYPE
LINK IMPORTANCE ASSIGNING DEVICE
21
URL SIMILARITY CALCULATING DEVICE
31
LINK IMPORTANCE
PARTICULAR URL
103
104
URL CHARACTER STRING DETERMINING DEVICE
INDEX CREATING DEVICE
24
105
LINK LIST
106
WEB SERVER
DISPLAY OUTPUT
COMMAND INPUT
WEB BROWSER

FIG. 30

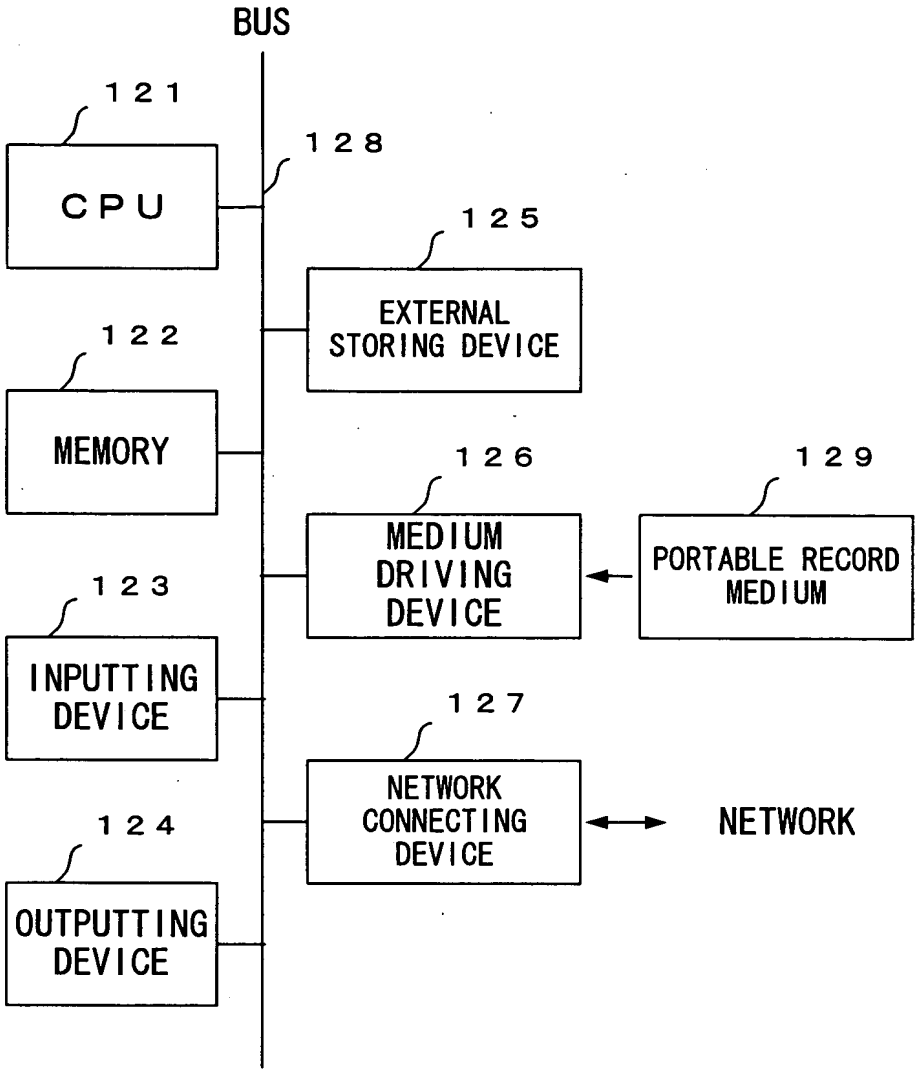

BUS
121
CPU
128
125
EXTERNAL STORING DEVICE
122
MEMORY
126
MEDIUM DRIVING DEVICE
129
PORTABLE RECORD MEDIUM
123
INPUTTING DEVICE
127
NETWORK CONNECTING DEVICE
NETWORK
124
OUTPUTTING DEVICE

FIG. 31

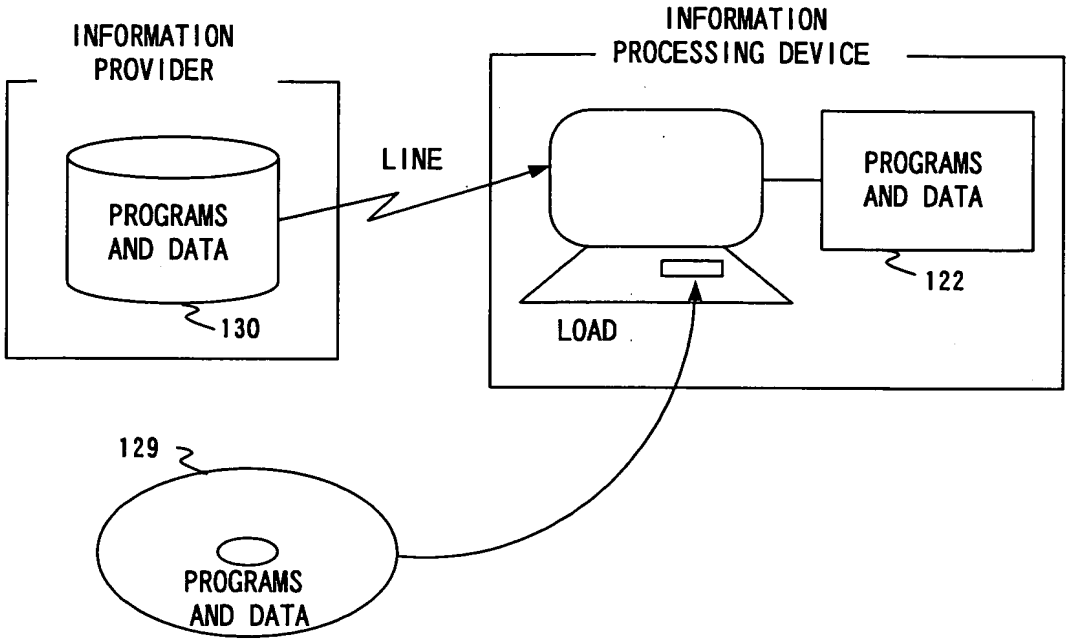

INFORMATION
PROVIDER
PROGRAMS
AND DATA
130
LINE
INFORMATION
PROCESSING DEVICE
PROGRAMS
AND DATA
122
LOAD
129
PROGRAMS
AND DATA

FIG. 32